

part unless that crewmember has completed the appropriate initial or recurrent training phase of the training program appropriate to the type of operation in which the crewmember is to serve since the beginning of the 12th calendar month before that service. This section does not apply to a certificate holder that uses only one pilot in the certificate holder's operations.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135-18, 47 FR 33396, Aug. 2, 1982]

**§ 135.345 Pilots: Initial, transition, and upgrade ground training.**

Initial, transition, and upgrade ground training for pilots must include instruction in at least the following, as applicable to their duties:

- (a) General subjects—
  - (1) The certificate holder's flight locating procedures;
  - (2) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;
  - (3) Enough meteorology to ensure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, windshear and, if appropriate, high altitude weather situations;
  - (4) Air traffic control systems, procedures, and phraseology;
  - (5) Navigation and the use of navigational aids, including instrument approach procedures;
  - (6) Normal and emergency communication procedures;
  - (7) Visual cues before and during descent below DH or MDA; and
  - (8) Other instructions necessary to ensure the pilot's competence.
- (b) For each aircraft type—
  - (1) A general description;
  - (2) Performance characteristics;
  - (3) Engines and propellers;
  - (4) Major components;
  - (5) Major aircraft systems (i.e., flight controls, electrical, and hydraulic), other systems, as appropriate, principles of normal, abnormal, and emergency operations, appropriate procedures and limitations;
  - (6) Knowledge and procedures for—
    - (i) Recognizing and avoiding severe weather situations;

- (ii) Escaping from severe weather situations, in case of inadvertent encounters, including low-altitude windshear (except that rotorcraft pilots are not required to be trained in escaping from low-altitude windshear);

- (iii) Operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions; and

- (iv) Operating airplanes during ground icing conditions, (i.e., any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane), if the certificate holder expects to authorize take-offs in ground icing conditions, including:
  - (A) The use of holdover times when using deicing/anti-icing fluids;

- (B) Airplane deicing/anti-icing procedures, including inspection and check procedures and responsibilities;
- (C) Communications;

- (D) Airplane surface contamination (i.e., adherence of frost, ice, or snow) and critical area identification, and knowledge of how contamination adversely affects airplane performance and flight characteristics;

- (E) Types and characteristics of deicing/anti-icing fluids, if used by the certificate holder;

- (F) Cold weather preflight inspection procedures;

- (G) Techniques for recognizing contamination on the airplane;

- (7) Operating limitations;

- (8) Fuel consumption and cruise control;

- (9) Flight planning;

- (10) Each normal and emergency procedure; and

- (11) The approved Aircraft Flight Manual, or equivalent.

[Doc. No. 16097, 43 FR 46783, Oct. 10, 1978, as amended by Amdt. 135-27, 53 FR 37697, Sept. 27, 1988; Amdt. 135-46, 58 FR 69630, Dec. 30, 1993]

**§ 135.347 Pilots: Initial, transition, upgrade, and differences flight training.**

(a) Initial, transition, upgrade, and differences training for pilots must include flight and practice in each of the